

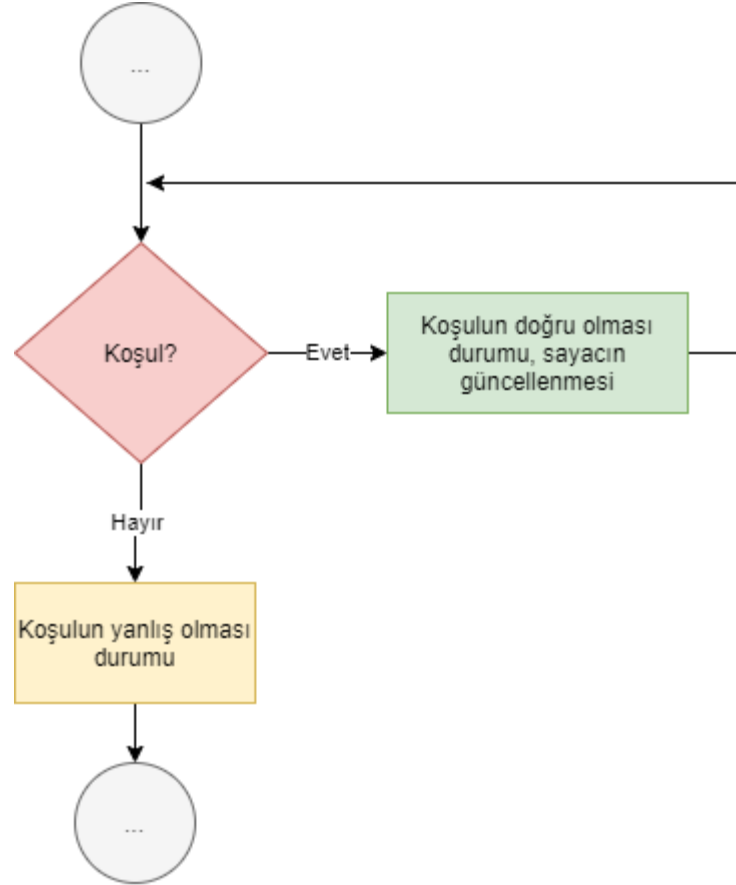
**Çevrimler (Döngüler)**

# Çevrimler

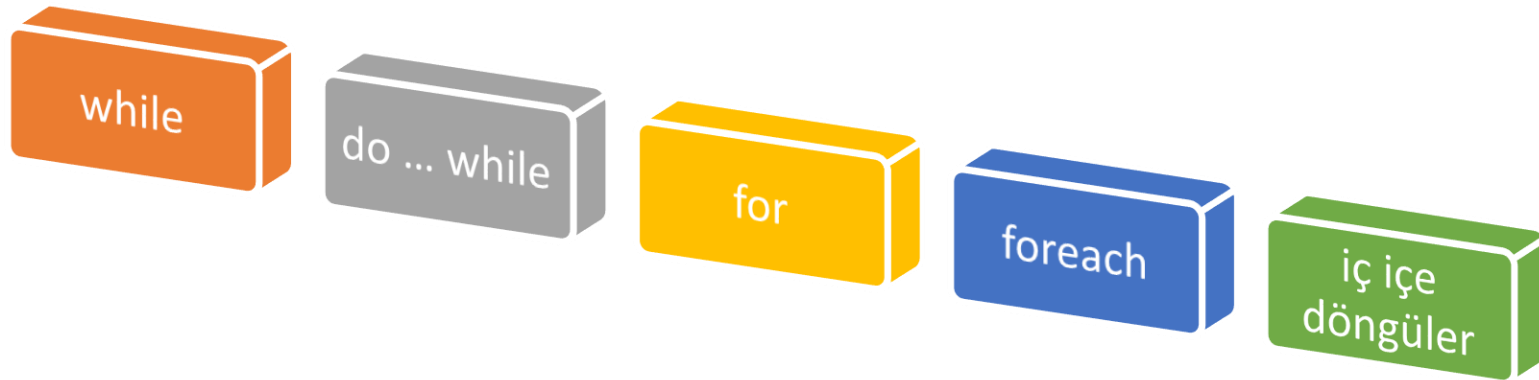
- Bir kod bloğunu birkaç kez çalıştırmanız gereken bir durum olabilir.
- Genel olarak, ifadeler sırayla yürütülür: Bir fonksiyondaki ilk ifade önce çalıştırılır, ardından ikincisi yapılır ve bu böyle devam eder.
- Programlama dilleri, daha karmaşık yürütme yollarına izin veren çeşitli kontrol yapıları sağlar.

# Çevrimler

- Bir döngü ifadesi, bir ifadeyi veya bir grup ifadeyi birden çok kez yürütmemize izin verir ve aşağıdaki şekil programlama dillerinin çoğunda bir döngü ifadesinin genelidir.

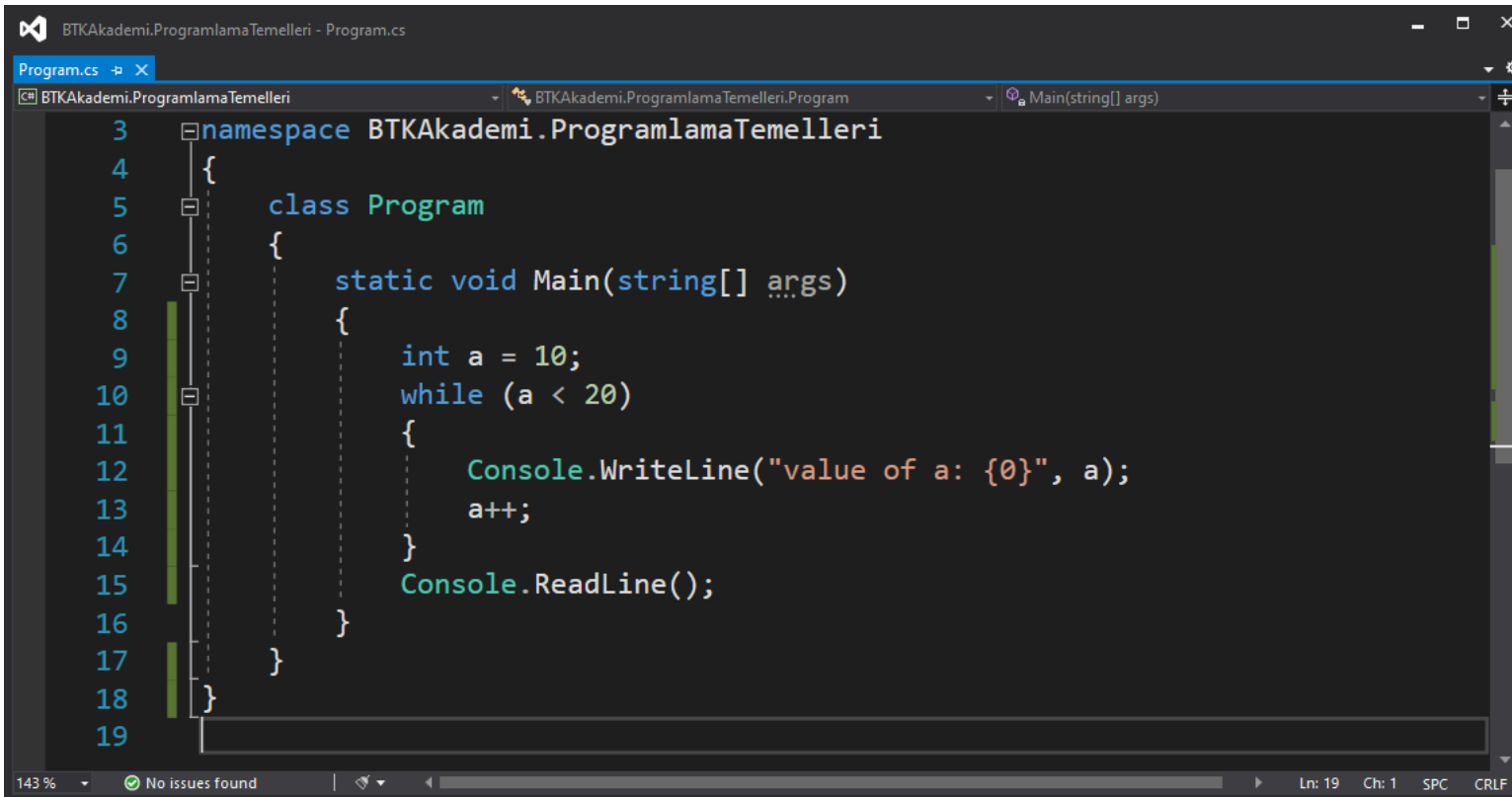


# Çevrimler



# while

- C# içindeki bir **while** döngüsü ifadesi, belirli bir koşul doğru olduğu sürece bir hedef ifadeyi tekrar tekrar yürütür.



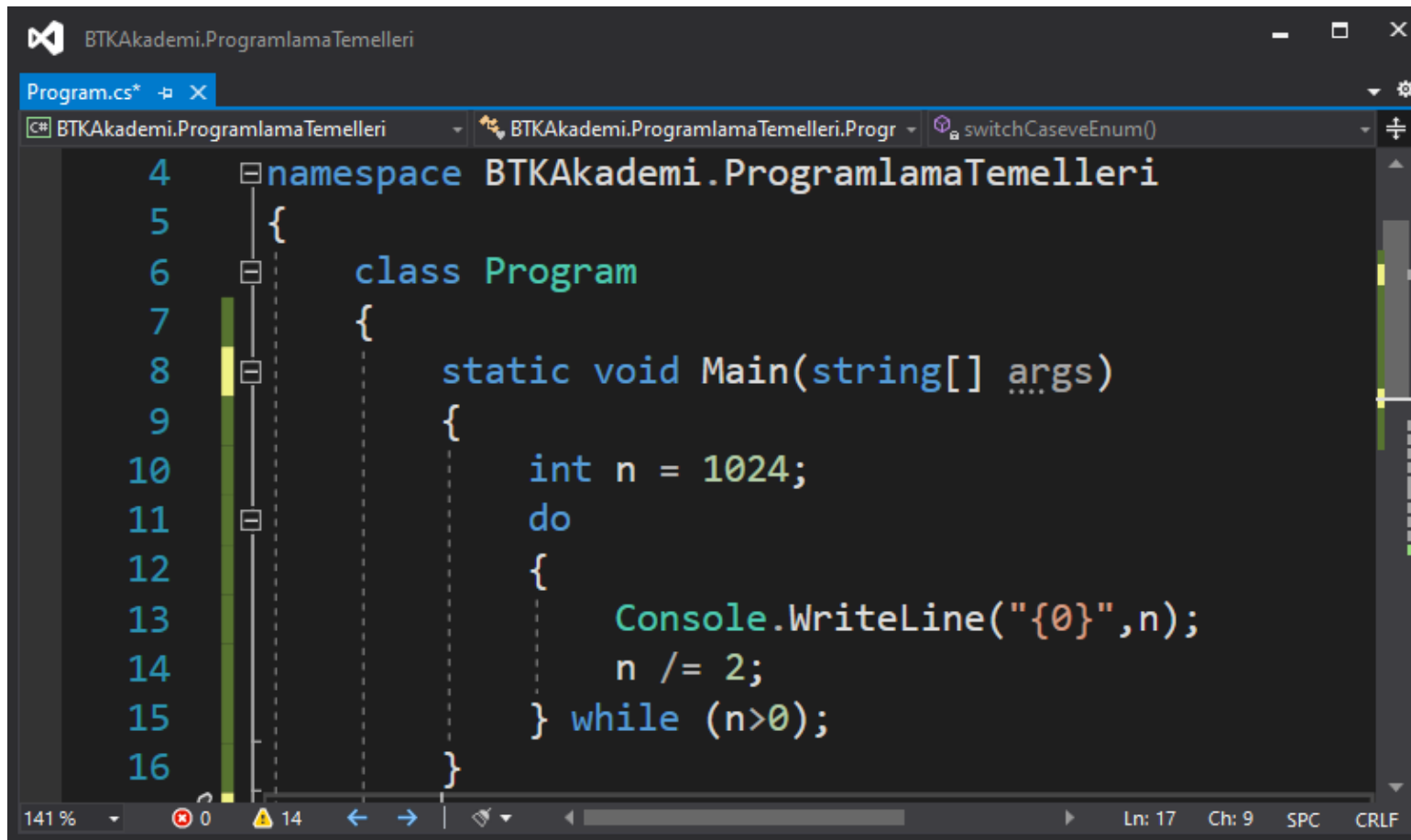
```
3 namespace BTKAkademi.ProgramlamaTemelleri
4 {
5     class Program
6     {
7         static void Main(string[] args)
8         {
9             int a = 10;
10            while (a < 20)
11            {
12                Console.WriteLine("value of a: {0}", a);
13                a++;
14            }
15            Console.ReadLine();
16        }
17    }
18 }
19
```

The screenshot shows a C# code editor window titled "BTKAkademi.ProgramlamaTemelleri - Program.cs". The code defines a namespace "BTKAkademi.ProgramlamaTemelleri" containing a class "Program" with a static method "Main". Inside "Main", a variable "a" is initialized to 10, and a "while" loop is used to print the value of "a" as long as it is less than 20. The loop body increments "a" by 1 and prints its value. The code is formatted with syntax highlighting and line numbers on the left. The status bar at the bottom indicates "143 %", "No issues found", and "Ln: 19 Ch: 1 SPC CRLF".

# do ... while

- Bu yapıda öncelikle koşula bakılmaksızın döngü içerisine girilir.
- Döngü içerisindeki kod bloğu bir kez çalıştırılır.
- Daha sonra koşul ifadesinin sağlanması durumunda ilgili kod bloğu çalışmaya devam eder; aksi durumda döngüde çıkılır.

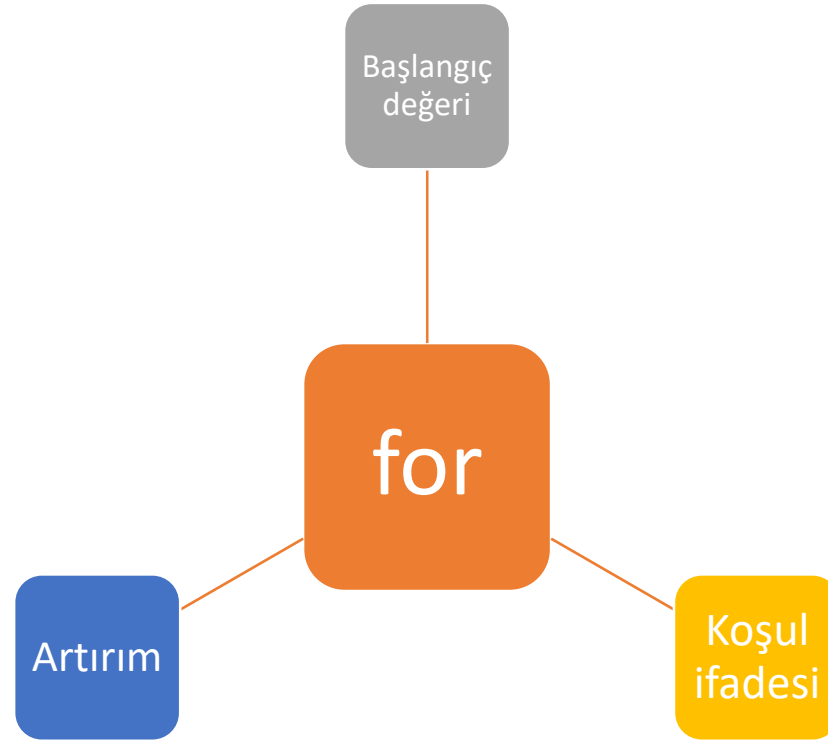
# do ... while



```
4 namespace BTKAkademi.ProgramlamaTemelleri
5 {
6     class Program
7     {
8         static void Main(string[] args)
9         {
10             int n = 1024;
11             do
12             {
13                 Console.WriteLine("{0}",n);
14                 n /= 2;
15             } while (n>0);
16         }
17     }
18 }
```

The screenshot shows a Visual Studio Code editor window with the file name "BTKAkademi.ProgramlamaTemelleri". The editor displays a C# program. The code defines a namespace "BTKAkademi.ProgramlamaTemelleri" containing a class "Program". Inside the "Program" class, there is a static method "Main" that takes an array of strings "args". The "Main" method contains a "do-while" loop. The loop body consists of two lines: "Console.WriteLine(\"{0}\",n);" and "n /= 2;". The loop continues as long as "n" is greater than 0. The initial value of "n" is 1024. The status bar at the bottom indicates the cursor is at line 17, column 9, with a tab size of 4 spaces and a line ending of CRLF.

# for döngüsü

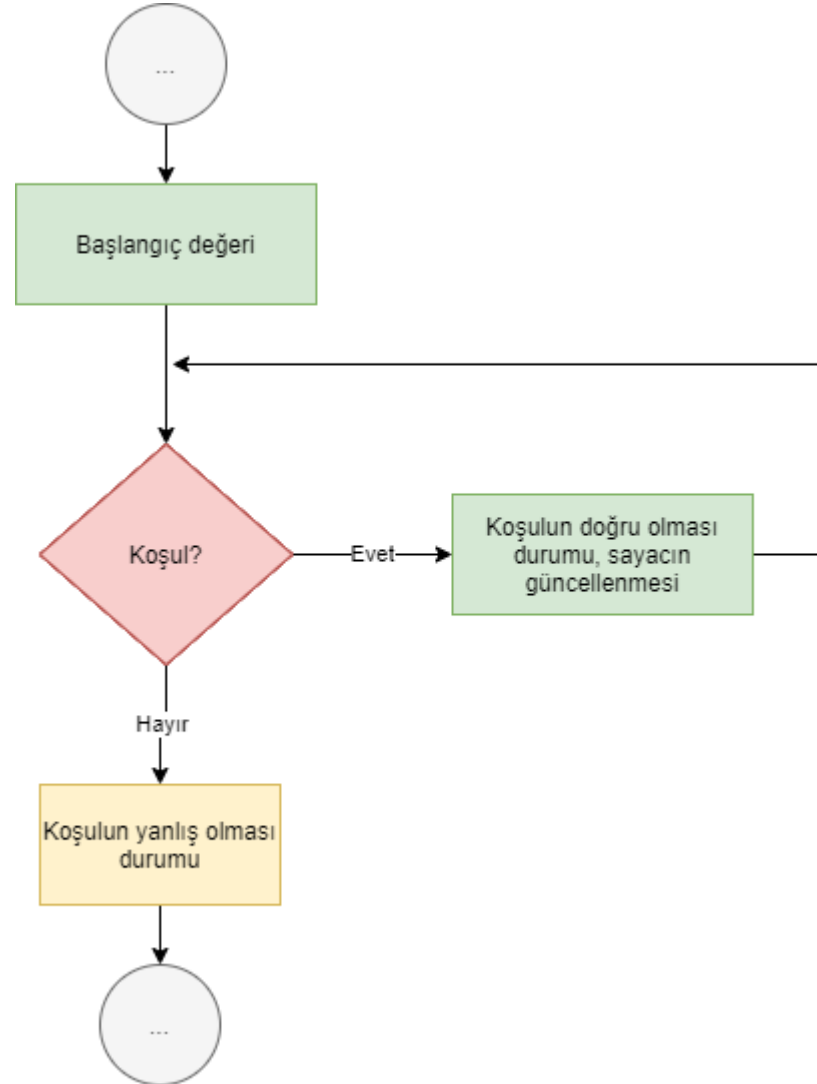


- Bir **for** döngüsü, belirli sayıda kez çalıştırılması gereken bir döngüyü verimli bir şekilde yazmanıza olanak tanıyan bir tekrar kontrol yapısıdır.

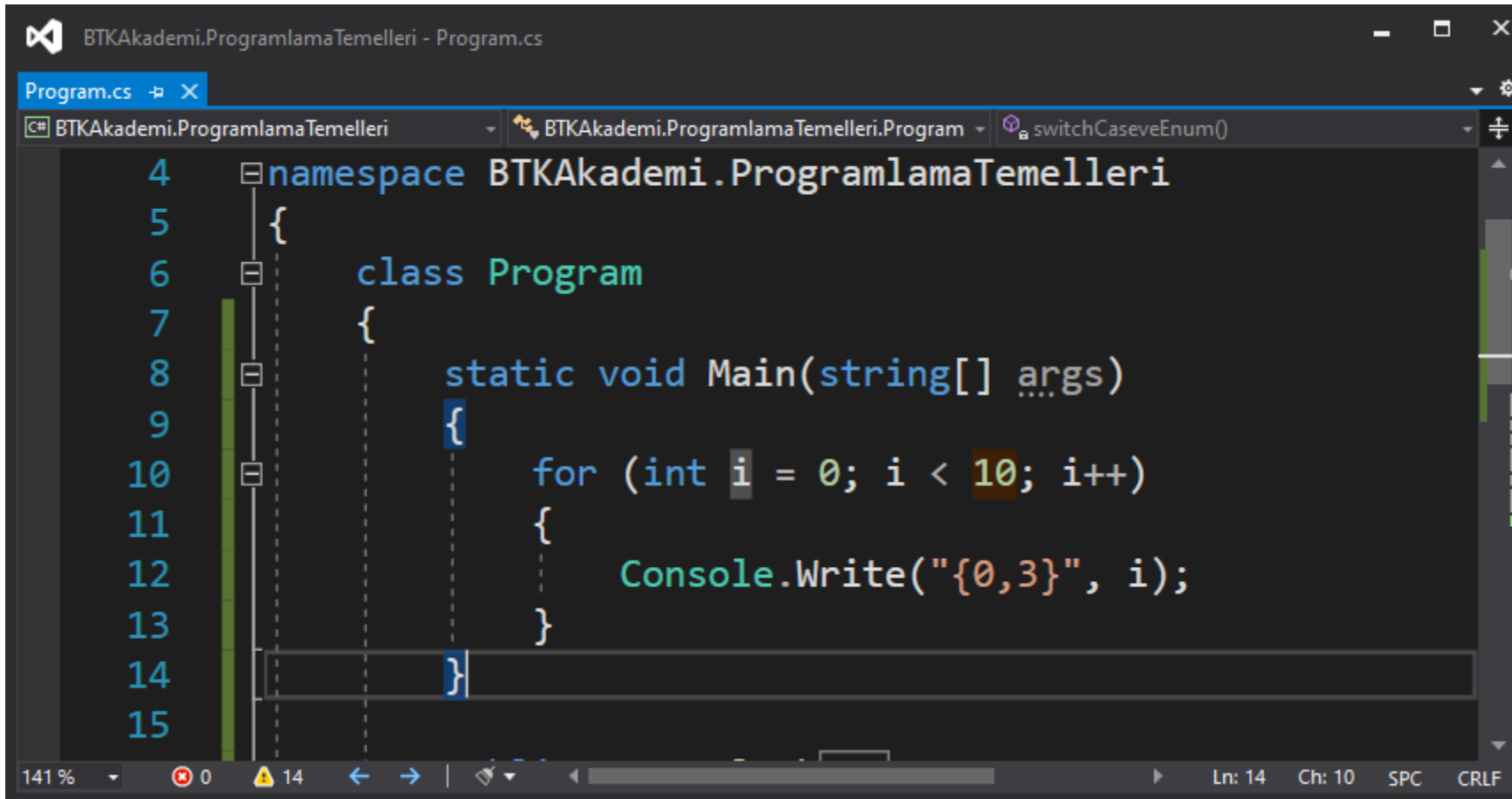


# for döngüsü

- En yaygın şekilde kullanılan döngü yapılarından biridir.



# for döngüsü



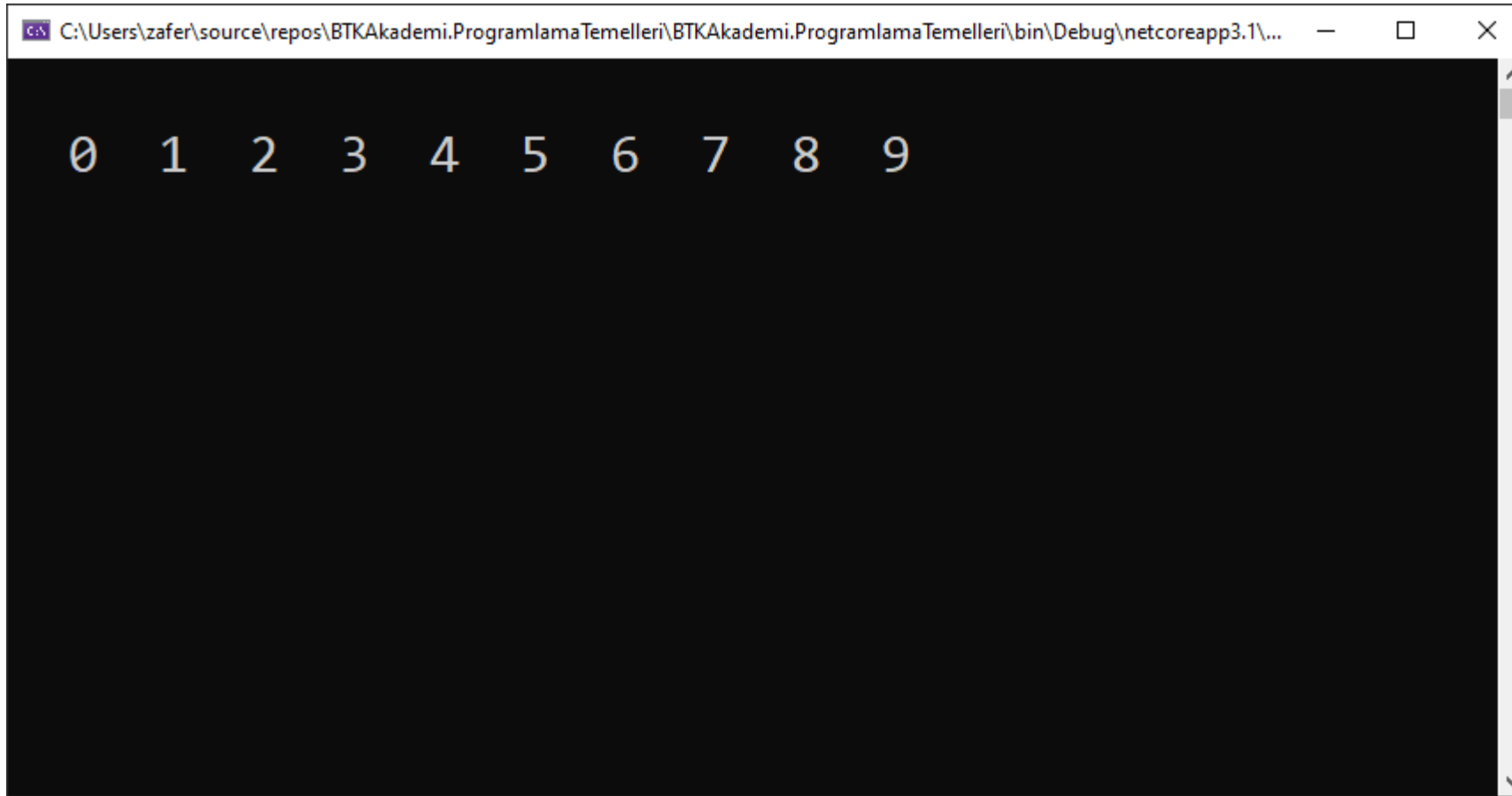
```
4 namespace BTKAkademi.ProgramlamaTemelleri
5 {
6     class Program
7     {
8         static void Main(string[] args)
9         {
10             for (int i = 0; i < 10; i++)
11             {
12                 Console.Write("{0,3}", i);
13             }
14         }
15     }
```

The screenshot shows a Visual Studio Code editor window titled "BTKAkademi.ProgramlamaTemelleri - Program.cs". The editor displays a C# program with a for loop. The code is as follows:

```
4 namespace BTKAkademi.ProgramlamaTemelleri
5 {
6     class Program
7     {
8         static void Main(string[] args)
9         {
10             for (int i = 0; i < 10; i++)
11             {
12                 Console.Write("{0,3}", i);
13             }
14         }
15     }
```

The status bar at the bottom indicates the file is at line 14, column 10, with a tab size of 4 spaces and a line ending of CRLF. The zoom level is 141%.

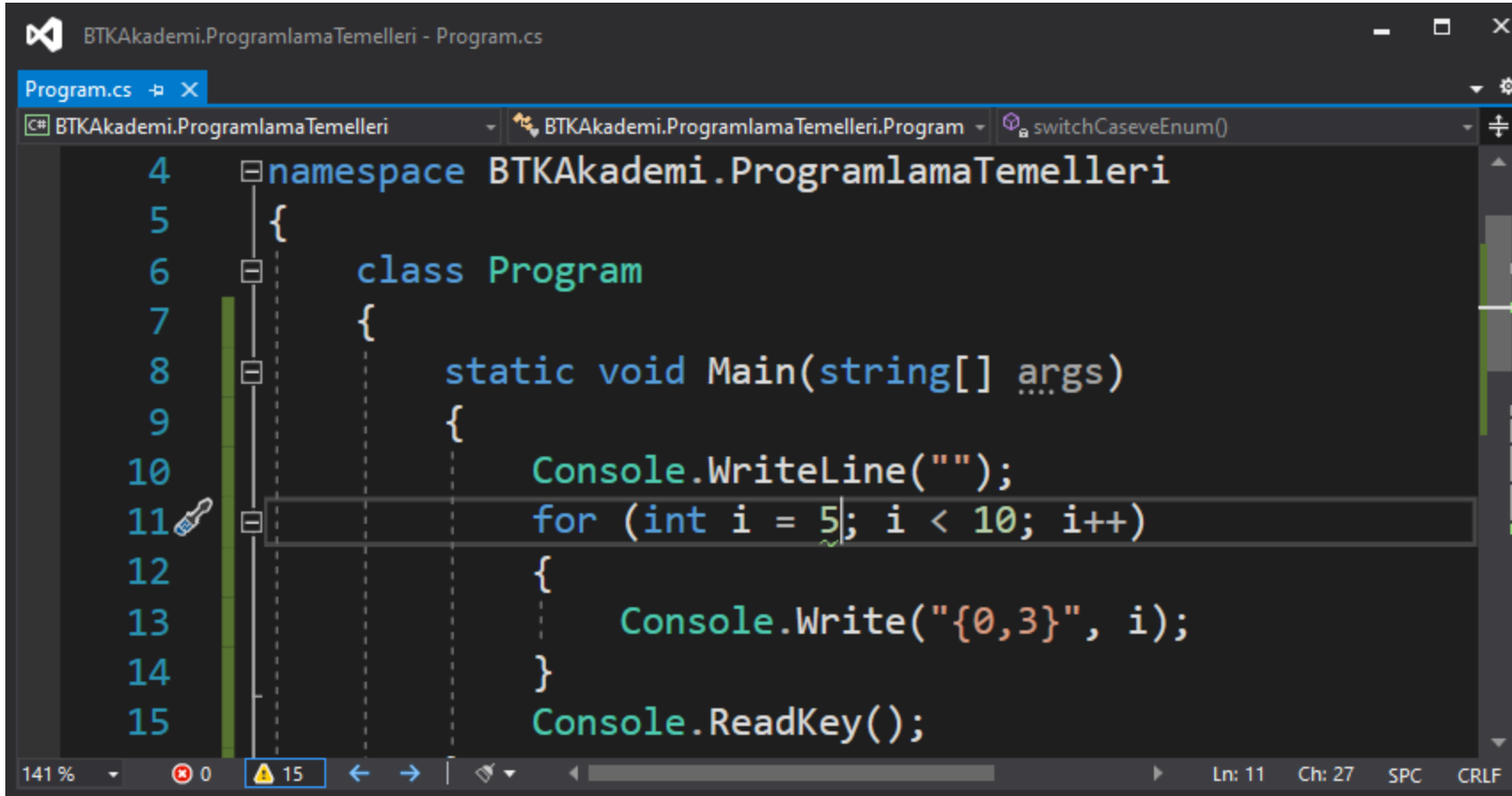
# for döngüsü



A screenshot of a Windows console window. The title bar shows the file path: C:\Users\zafer\source\repos\BTkAkademi.ProgramlamaTemelleri\BTkAkademi.ProgramlamaTemelleri\bin\Debug\netcoreapp3.1\... The console output displays the numbers 0 through 9, each on a new line, in a yellow monospace font.

```
0
1
2
3
4
5
6
7
8
9
```

# for döngüsü



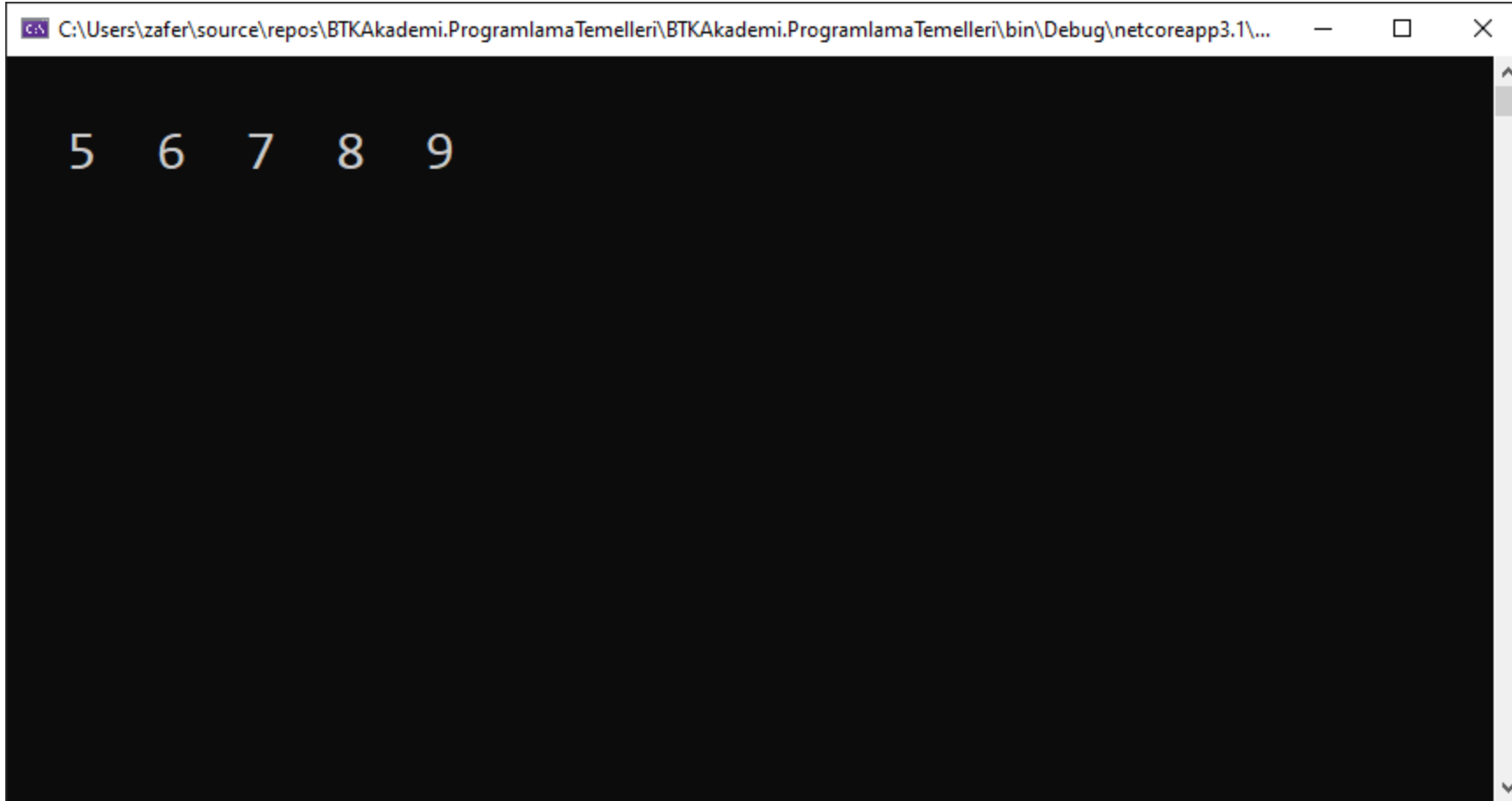
```
4 namespace BTKAkademi.ProgramlamaTemelleri
5 {
6     class Program
7     {
8         static void Main(string[] args)
9         {
10             Console.WriteLine("");
11             for (int i = 5; i < 10; i++)
12             {
13                 Console.Write("{0,3}", i);
14             }
15             Console.ReadKey();
16         }
17     }
18 }
```

The screenshot shows a Visual Studio Code editor window titled "BTKAkademi.ProgramlamaTemelleri - Program.cs". The editor displays a C# program with a for loop. The code is as follows:

```
4 namespace BTKAkademi.ProgramlamaTemelleri
5 {
6     class Program
7     {
8         static void Main(string[] args)
9         {
10             Console.WriteLine("");
11             for (int i = 5; i < 10; i++)
12             {
13                 Console.Write("{0,3}", i);
14             }
15             Console.ReadKey();
16         }
17     }
18 }
```

The for loop is highlighted with a mouse cursor. The status bar at the bottom shows "141 %", "0", "15", and navigation icons. The bottom right corner of the editor shows "Ln: 11 Ch: 27 SPC CRLF".

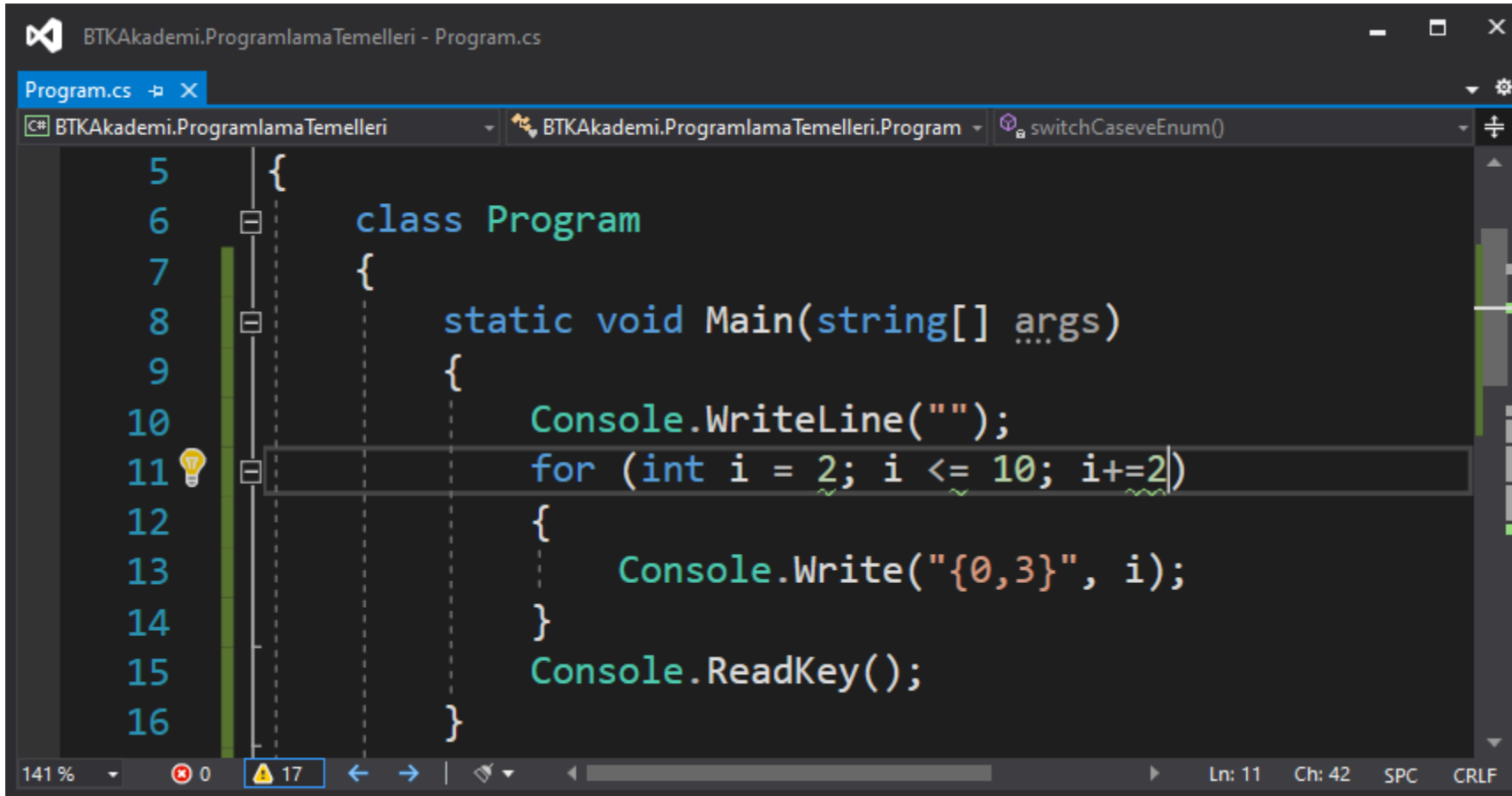
# for döngüsü



```
C:\Users\zafer\source\repos\BTkAkademi.ProgramlamaTemelleri\BTkAkademi.ProgramlamaTemelleri\bin\Debug\netcoreapp3.1\...  
5 6 7 8 9
```

The screenshot shows a Windows console window with a black background and white text. The title bar indicates the file path: C:\Users\zafer\source\repos\BTkAkademi.ProgramlamaTemelleri\BTkAkademi.ProgramlamaTemelleri\bin\Debug\netcoreapp3.1\... The console output displays the numbers 5, 6, 7, 8, and 9, each followed by a space, on a single line.

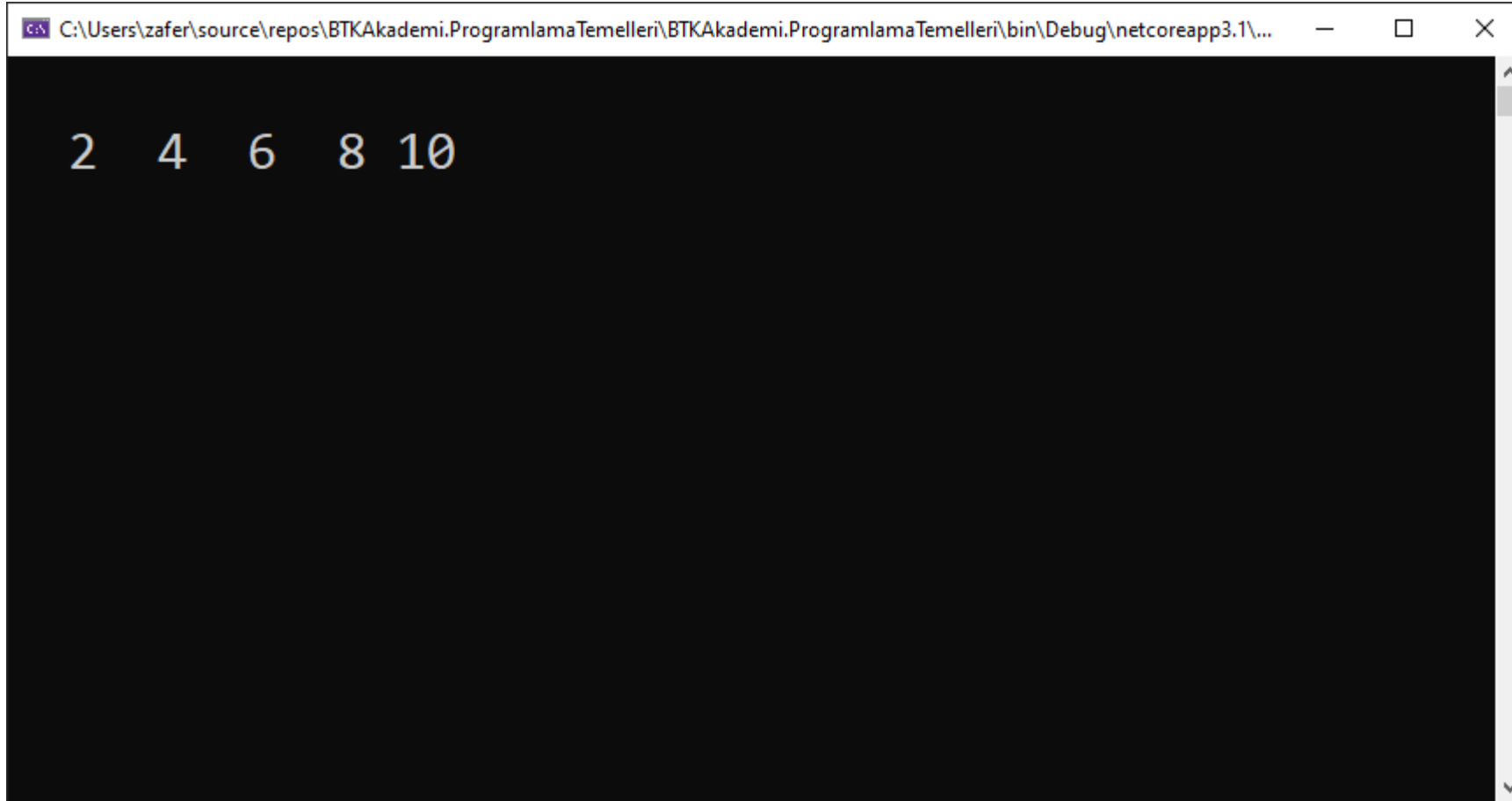
# for döngüsü



```
5 {  
6     class Program  
7     {  
8         static void Main(string[] args)  
9         {  
10             Console.WriteLine("");  
11             for (int i = 2; i <= 10; i+=2)  
12             {  
13                 Console.Write("{0,3}", i);  
14             }  
15             Console.ReadKey();  
16         }  
    }
```

The screenshot shows a Visual Studio Code editor window titled "BTKAkademi.ProgramlamaTemelleri - Program.cs". The editor displays a C# program. The code defines a class named "Program" with a static method "Main" that takes a string array "args". Inside the "Main" method, it first calls "Console.WriteLine("")" to output an empty line. Then, it enters a "for" loop with the header "for (int i = 2; i <= 10; i+=2)". The loop body contains a "Console.Write" statement that prints the value of "i" with a width of 3 characters, formatted as "{0,3}", followed by a space. The loop continues until "i" is greater than 10. After the loop, it calls "Console.ReadKey()" to wait for a key press. The status bar at the bottom shows "141 %", "0" errors, "17" warnings, and the current position is "Ln: 11 Ch: 42 SPC CRLF".

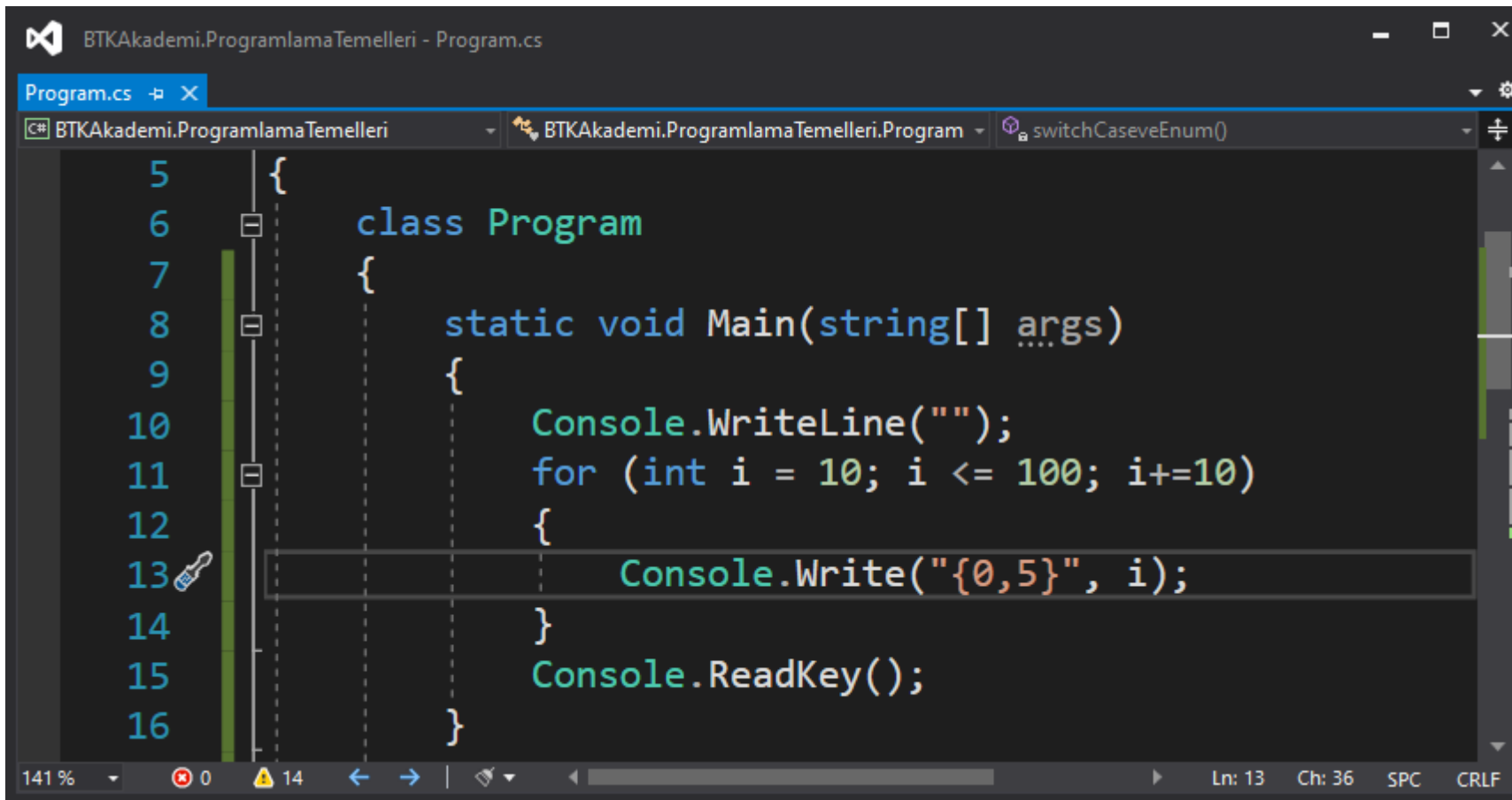
# for döngüsü



```
C:\Users\zafer\source\repos\BTkAkademi.ProgramlamaTemelleri\BTkAkademi.ProgramlamaTemelleri\bin\Debug\netcoreapp3.1\...  
2 4 6 8 10
```

The screenshot shows a Windows command prompt window with a black background and white text. The title bar indicates the path to the application. The output of the program is the numbers 2, 4, 6, 8, and 10, each followed by a space, displayed on a single line.

# for döngüsü



```
5 {  
6     class Program  
7     {  
8         static void Main(string[] args)  
9         {  
10             Console.WriteLine("");  
11             for (int i = 10; i <= 100; i+=10)  
12             {  
13                 Console.Write("{0,5}", i);  
14             }  
15             Console.ReadKey();  
16         }  
    }
```

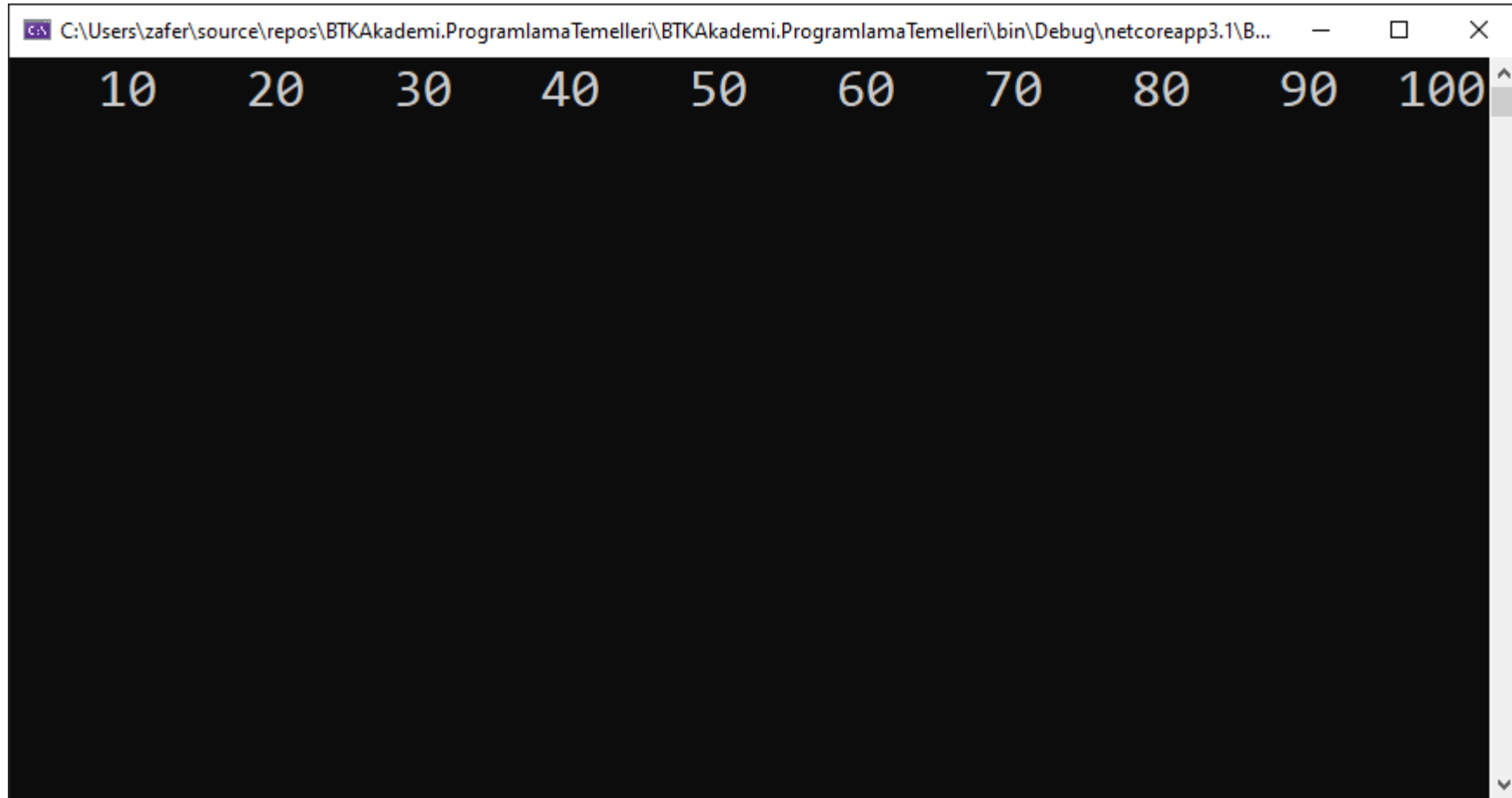
The screenshot shows a Visual Studio Code editor window titled "BTKAkademi.ProgramlamaTemelleri - Program.cs". The editor displays a C# program with a for loop. The code is as follows:

```
5 {  
6     class Program  
7     {  
8         static void Main(string[] args)  
9         {  
10             Console.WriteLine("");  
11             for (int i = 10; i <= 100; i+=10)  
12             {  
13                 Console.Write("{0,5}", i);  
14             }  
15             Console.ReadKey();  
16         }  
    }
```

The for loop is highlighted with a blue selection bar. The status bar at the bottom shows "141 %", "0" errors, "14" warnings, and "Ln: 13 Ch: 36 SPC CRLF".



# for döngüsü



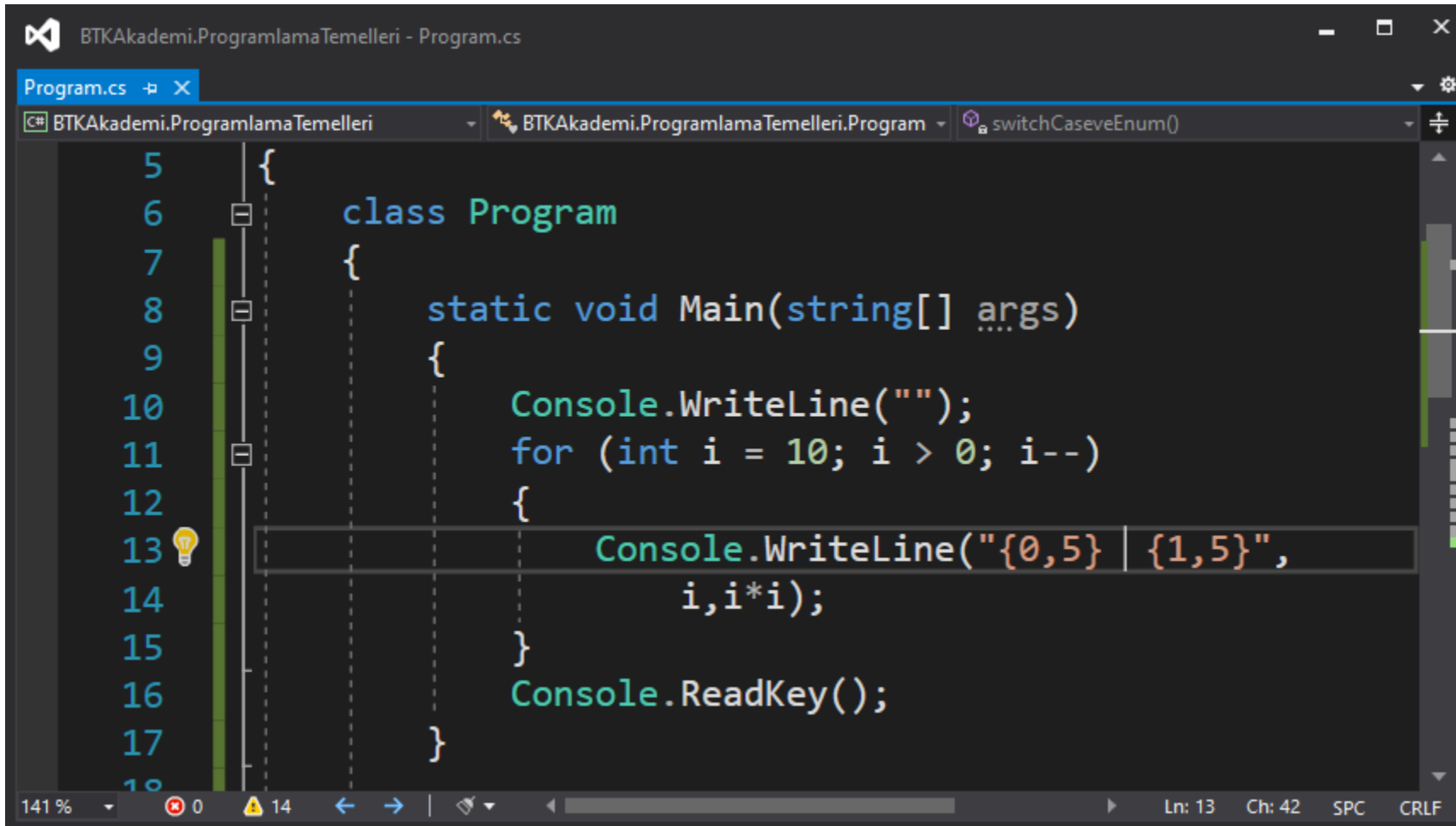
The screenshot shows a Windows console window titled "C:\Users\zafer\source\repos\BTKAkademi.ProgramlamaTemelleri\BTKAkademi.ProgramlamaTemelleri\bin\Debug\netcoreapp3.1\B...". The console output displays the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100, each on a new line, demonstrating the execution of a for loop.

```
C:\Users\zafer\source\repos\BTKAkademi.ProgramlamaTemelleri\BTKAkademi.ProgramlamaTemelleri\bin\Debug\netcoreapp3.1\B...  
10  
20  
30  
40  
50  
60  
70  
80  
90  
100
```

# for döngüsü (?)

```
C:\Users\zafer\source\repos\BTkAkademi.ProgramlamaTemelleri\BTkAkademi.ProgramlamaTemelleri\bin\Debug\netcoreapp3.1\...  
  
10      100  
9        81  
8        64  
7        49  
6        36  
5        25  
4        16  
3         9  
2         4  
1         1
```

# for döngüsü



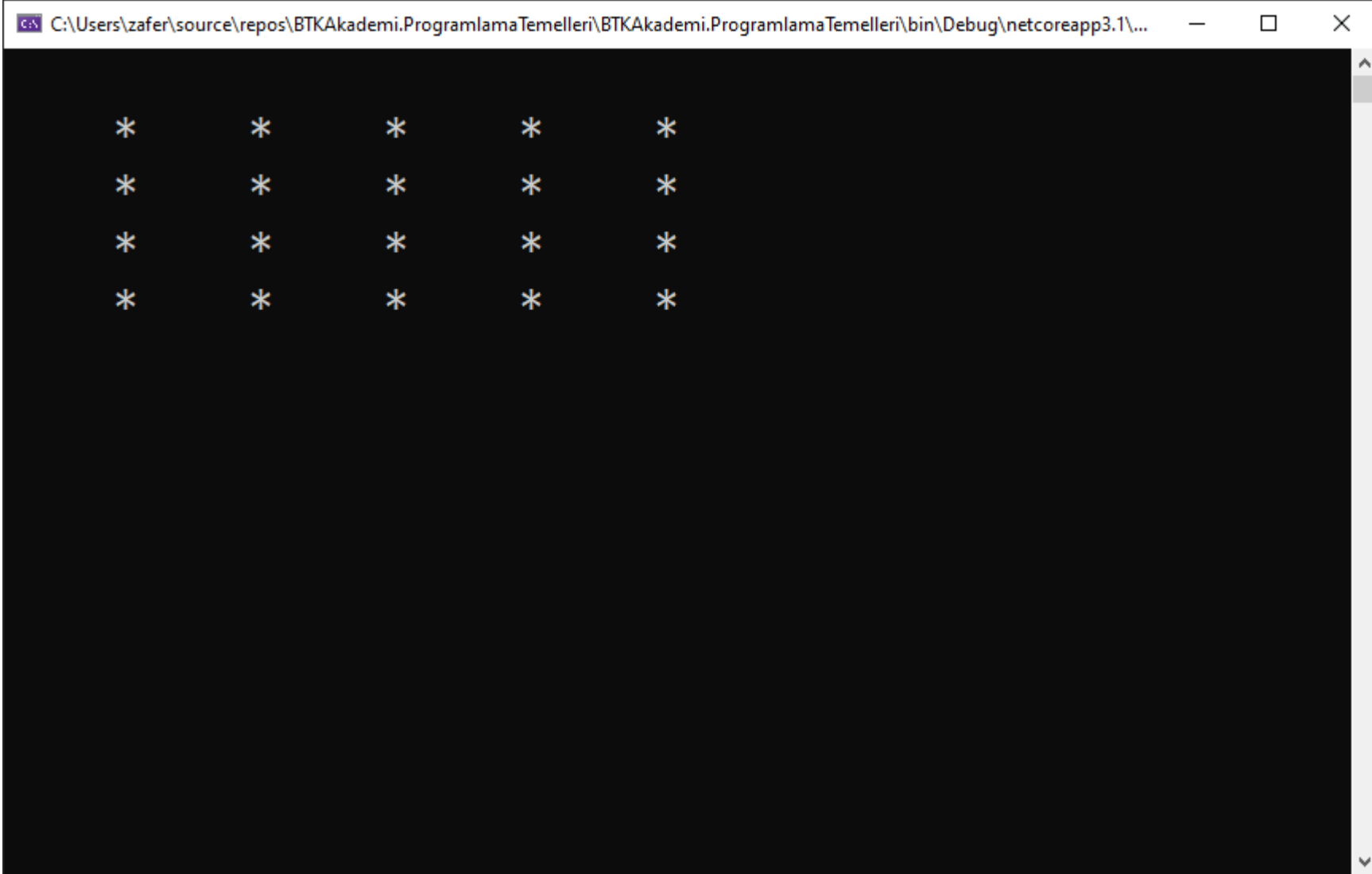
```
5 {  
6     class Program  
7     {  
8         static void Main(string[] args)  
9         {  
10             Console.WriteLine("");  
11             for (int i = 10; i > 0; i--)  
12             {  
13                 Console.WriteLine("{0,5} | {1,5}",  
14                     i, i*i);  
15             }  
16             Console.ReadKey();  
17         }  
18     }  
19 }
```

The screenshot shows a Visual Studio Code editor window titled "BTKAkademi.ProgramlamaTemelleri - Program.cs". The editor displays a C# program with a for loop. The code is as follows:

```
5 {  
6     class Program  
7     {  
8         static void Main(string[] args)  
9         {  
10             Console.WriteLine("");  
11             for (int i = 10; i > 0; i--)  
12             {  
13                 Console.WriteLine("{0,5} | {1,5}",  
14                     i, i*i);  
15             }  
16             Console.ReadKey();  
17         }  
18     }  
19 }
```

The code is written in a dark-themed editor. The for loop starts at line 11 and ends at line 15. The loop body contains a Console.WriteLine statement that formats the output to show the value of i and its square (i\*i) with a width of 5 characters. The status bar at the bottom indicates the current line is 13, column is 42, and the encoding is SPC and CRLF.

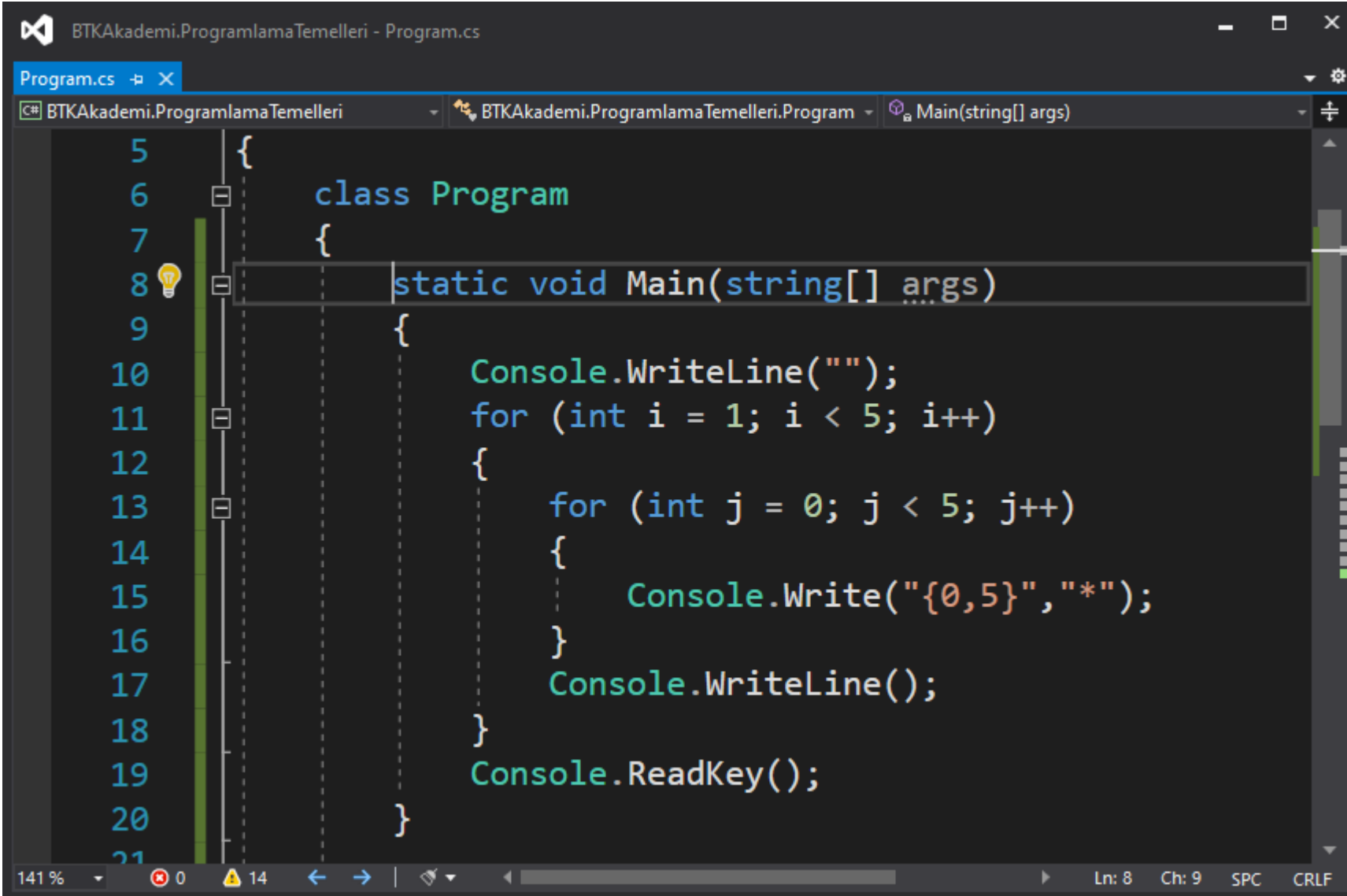
# for döngüsü



The screenshot shows a Windows console window with a black background. The title bar at the top reads "C:\Users\zafer\source\repos\BTKAkademi.ProgramlamaTemelleri\BTKAkademi.ProgramlamaTemelleri\bin\Debug\netcoreapp3.1\...". The console output consists of a 4x5 grid of asterisks (\*) printed in yellow. The asterisks are arranged in four rows and five columns, with spaces between them.

```
*      *      *      *      *  
*      *      *      *      *  
*      *      *      *      *  
*      *      *      *      *
```

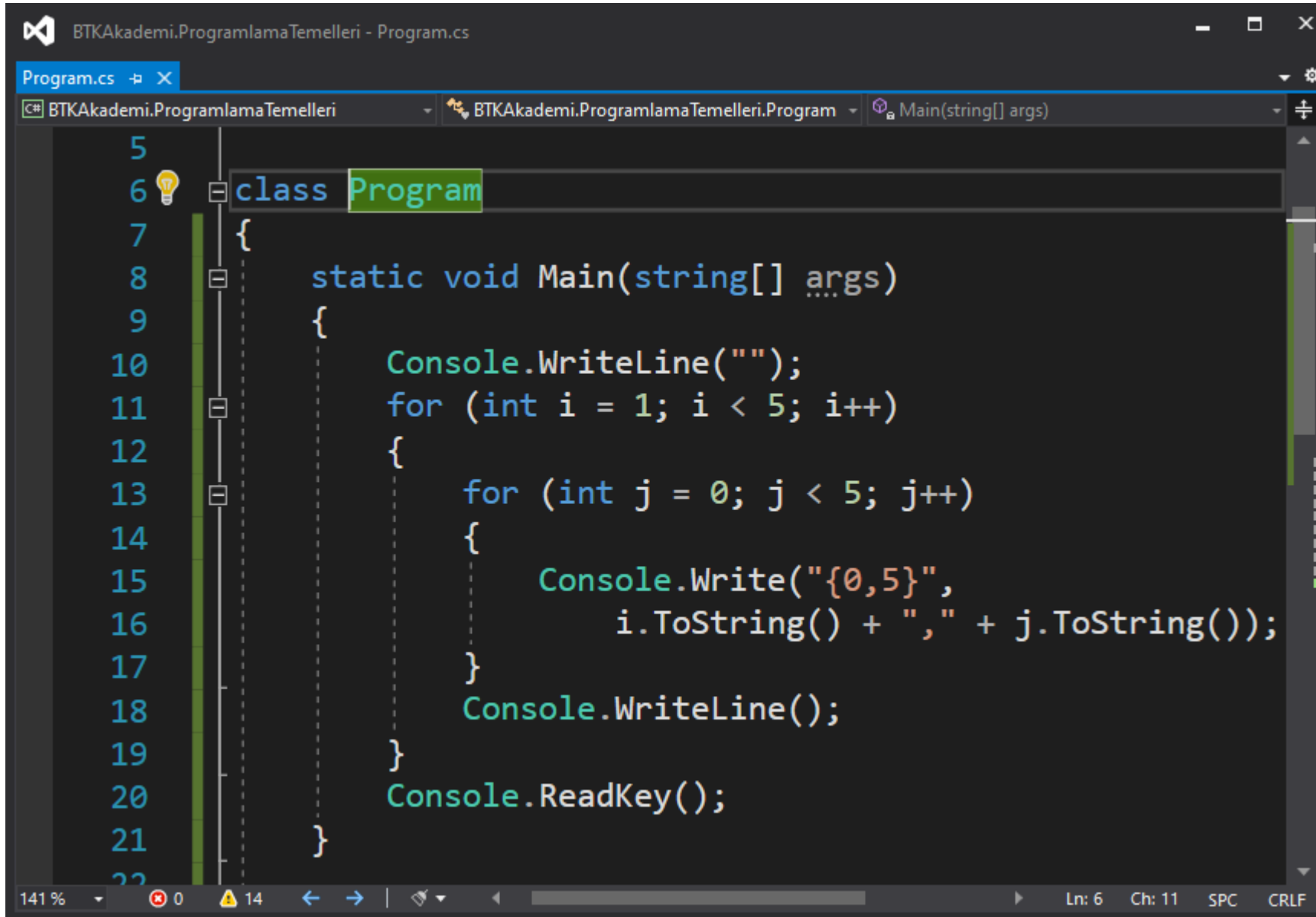
# for döngüsü



```
5 {  
6     class Program  
7     {  
8         static void Main(string[] args)  
9         {  
10             Console.WriteLine("");  
11             for (int i = 1; i < 5; i++)  
12             {  
13                 for (int j = 0; j < 5; j++)  
14                 {  
15                     Console.Write("{0,5}", "*");  
16                 }  
17                 Console.WriteLine();  
18             }  
19             Console.ReadKey();  
20         }  
21     }
```

The screenshot shows a Visual Studio Code editor window titled "BTKAkademi.ProgramlamaTemelleri - Program.cs". The editor displays a C# program with a class named "Program" containing a static method "Main". The "Main" method uses two nested "for" loops to print a pattern of asterisks. The first loop iterates from 1 to 4, and the second loop iterates from 0 to 4. The output of the program is a 4x5 grid of asterisks. The status bar at the bottom shows the file is open at line 8, column 9, with a 141% zoom level and a CRLF line ending.

# for döngüsü



```
5
6 class Program
7 {
8     static void Main(string[] args)
9     {
10         Console.WriteLine("");
11         for (int i = 1; i < 5; i++)
12         {
13             for (int j = 0; j < 5; j++)
14             {
15                 Console.Write("{0,5}",
16                     i.ToString() + "," + j.ToString());
17             }
18             Console.WriteLine();
19         }
20         Console.ReadKey();
21     }
22 }
```

The screenshot shows a Visual Studio Code editor window titled "BTKAkademi.ProgramlamaTemelleri - Program.cs". The editor displays a C# program with a class named "Program" containing a static method "Main". The "Main" method uses two nested "for" loops to iterate over values of "i" (from 1 to 4) and "j" (from 0 to 4). Inside the inner loop, it prints the values of "i" and "j" separated by a comma, with "i" formatted with a width of 5. After the inner loop completes, it prints a newline character. The program ends with a "Console.ReadKey()" call. The status bar at the bottom indicates the file is at line 6, column 11, with a space character and a carriage return (SPC CRLF).

# for döngüsü

```
C:\Users\zafer\source\repos\BTAKademi.ProgramlamaTemelleri\BTAKademi.ProgramlamaTemelleri\bin\Debug\netcoreapp3.1\BT...  
1,0 1,1 1,2 1,3 1,4  
2,0 2,1 2,2 2,3 2,4  
3,0 3,1 3,2 3,3 3,4  
4,0 4,1 4,2 4,3 4,4
```

# for döngüsü ?

```
C:\Users\zafer\source\repos\BTkAkademi.ProgramlamaTemelleri\BTkAkademi.ProgramlamaTemelleri\bin\Debug\netc...  
  
-  
-      -  
-      -      -  
-      -      -      -  
-      -      -      -      -
```



# for döngüsü

```
BTKAkademi.ProgramlamaTemelleri - Program.cs
Program.cs
C# BTKAkademi.ProgramlamaTemelleri BTKAkademi.ProgramlamaTemelleri.Progi Main(string[] args)
4 namespace BTKAkademi.ProgramlamaTemelleri
5 {
6     class Program
7     {
8         static void Main(string[] args)
9         {
10             Console.WriteLine("");
11             for (int i = 0; i < 5; i++)
12             {
13                 for (int j = 0; j <= i; j++)
14                     Console.Write("{0,5}", '-');
15                 Console.WriteLine();
16             }
17             Console.ReadKey();
18         }
19     }
20 }
```

141 % 0 14 Ln: 14 Ch: 45 SPC CRLF

# for döngüsü

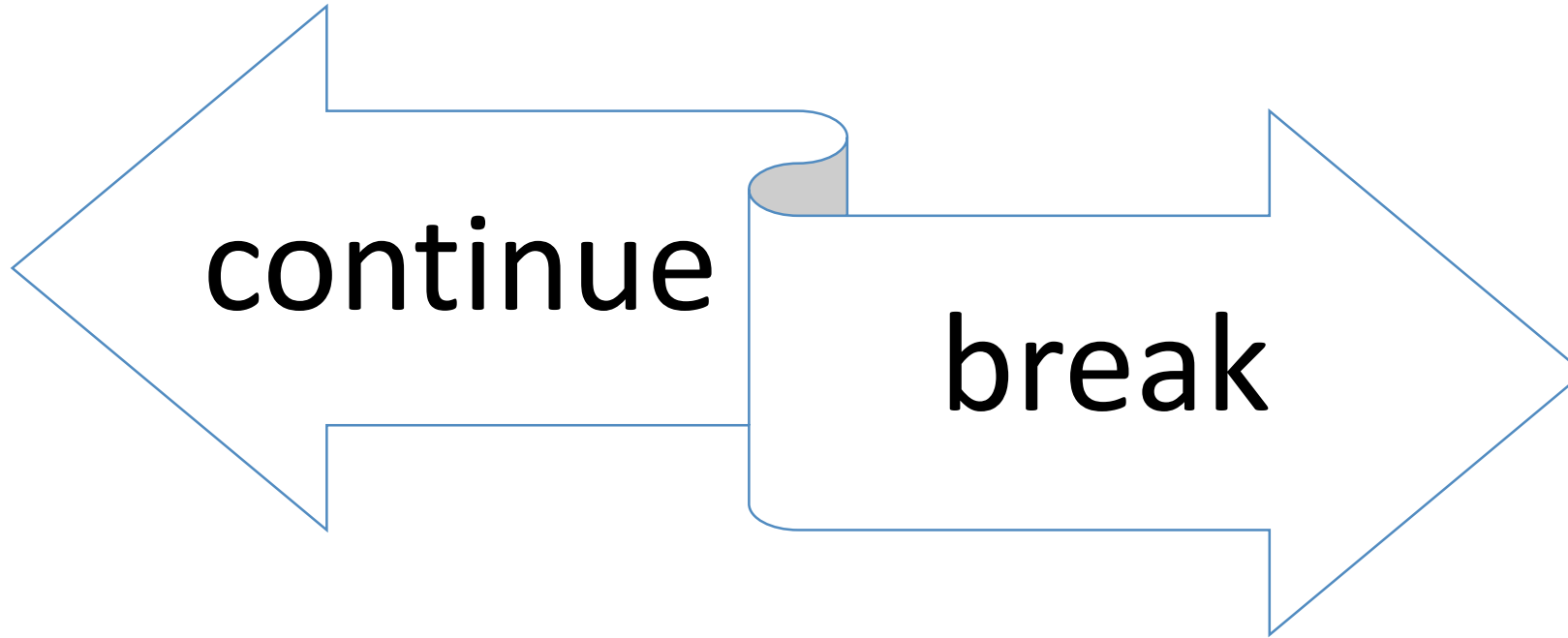
```
Program.cs
BTKAkademi.ProgramlamaTemelleri - Program.cs
C# BTKAkademi.ProgramlamaTemelleri BTKAkademi.ProgramlamaTemelleri.Prog Main(string[] args)
4 namespace BTKAkademi.ProgramlamaTemelleri
5
6 class Program
7
8     static void Main(string[] args)
9     {
10         Console.WriteLine("");
11         for (int i = 0; i < 5; i++)
12         {
13             for (int j = 0; j <= i; j++)
14                 Console.Write("{0,5}",
15                     i.ToString() + ", "
16                     + j.ToString());
17             Console.WriteLine();
18         }
19         Console.ReadKey();
20     }
21 }
```

141 % 0 14 Ln: 11 Ch: 34 SPC CRLF

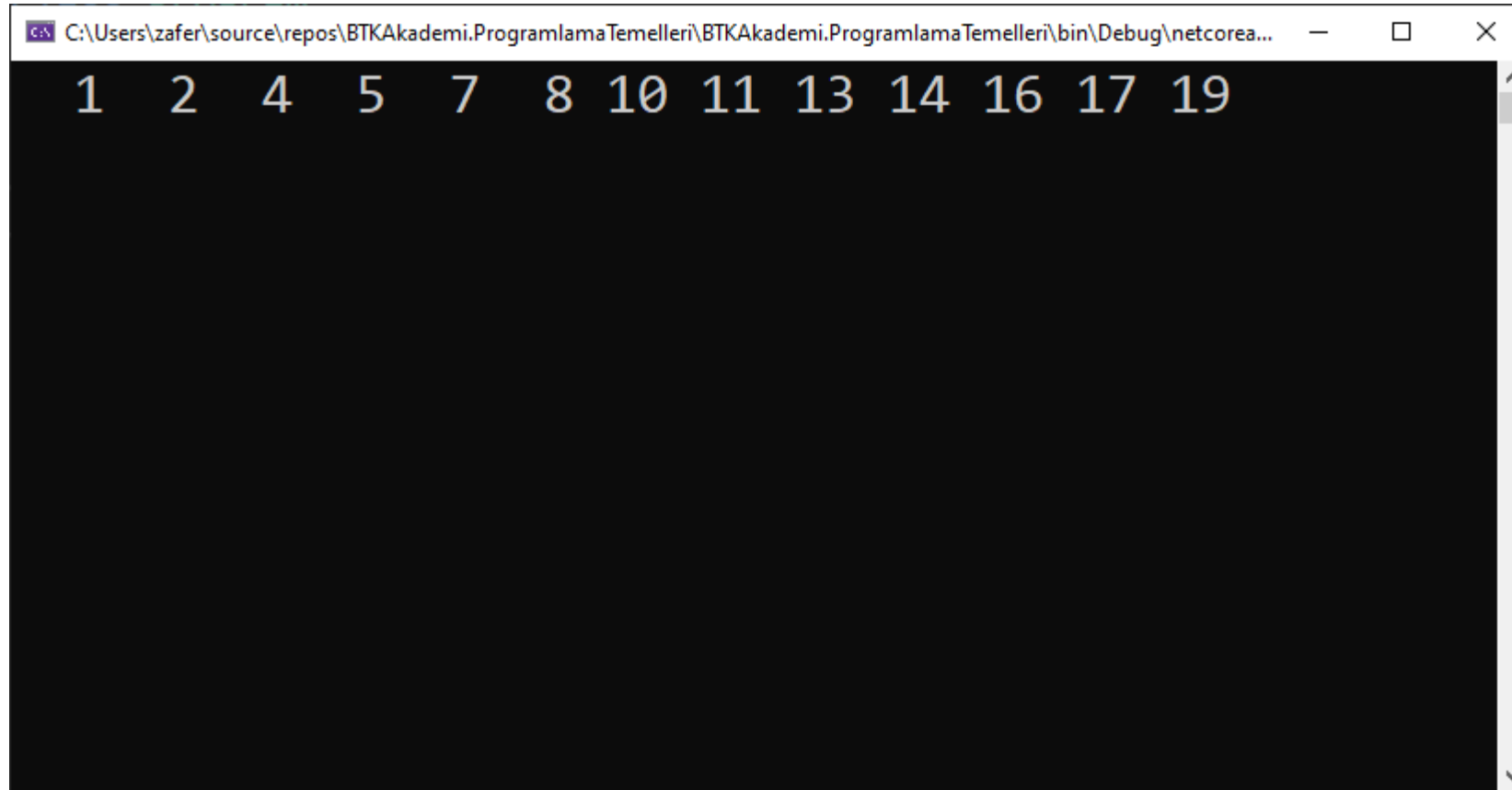
# for döngüsü

```
C:\Users\zafer\source\repos\BTkAkademi.ProgramlamaTemelleri\BTkAkademi.ProgramlamaTemelleri\bin\Debug\netc...  
  
0,0  
1,0 1,1  
2,0 2,1 2,2  
3,0 3,1 3,2 3,3  
4,0 4,1 4,2 4,3 4,4
```

# Döngü kontrol ifadeleri

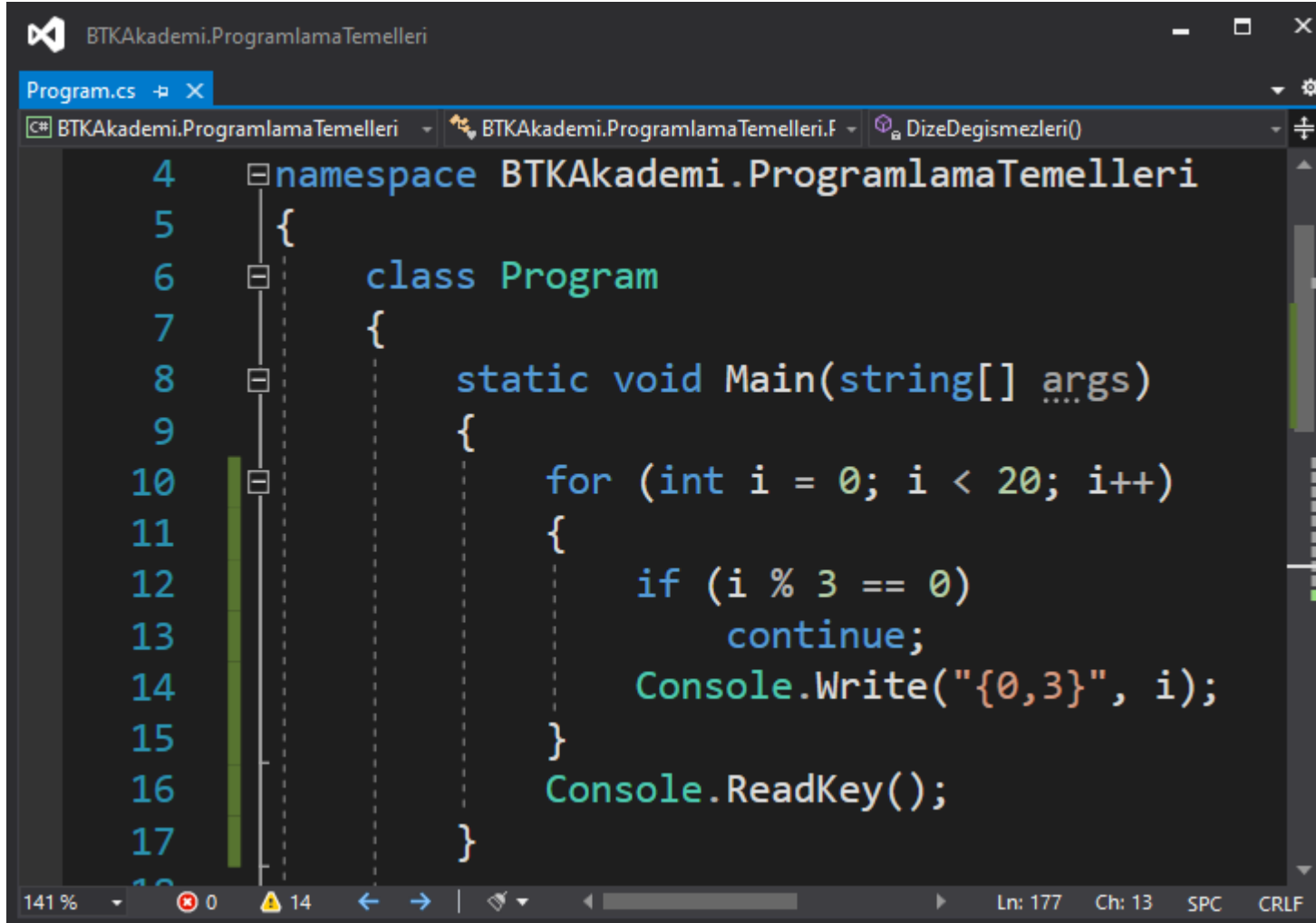


# Döngü kontrol ifadeleri (?)



```
C:\Users\zafer\source\repos\BTKAkademi.ProgramlamaTemelleri\BTKAkademi.ProgramlamaTemelleri\bin\Debug\netcorea...  
1 2 4 5 7 8 10 11 13 14 16 17 19
```

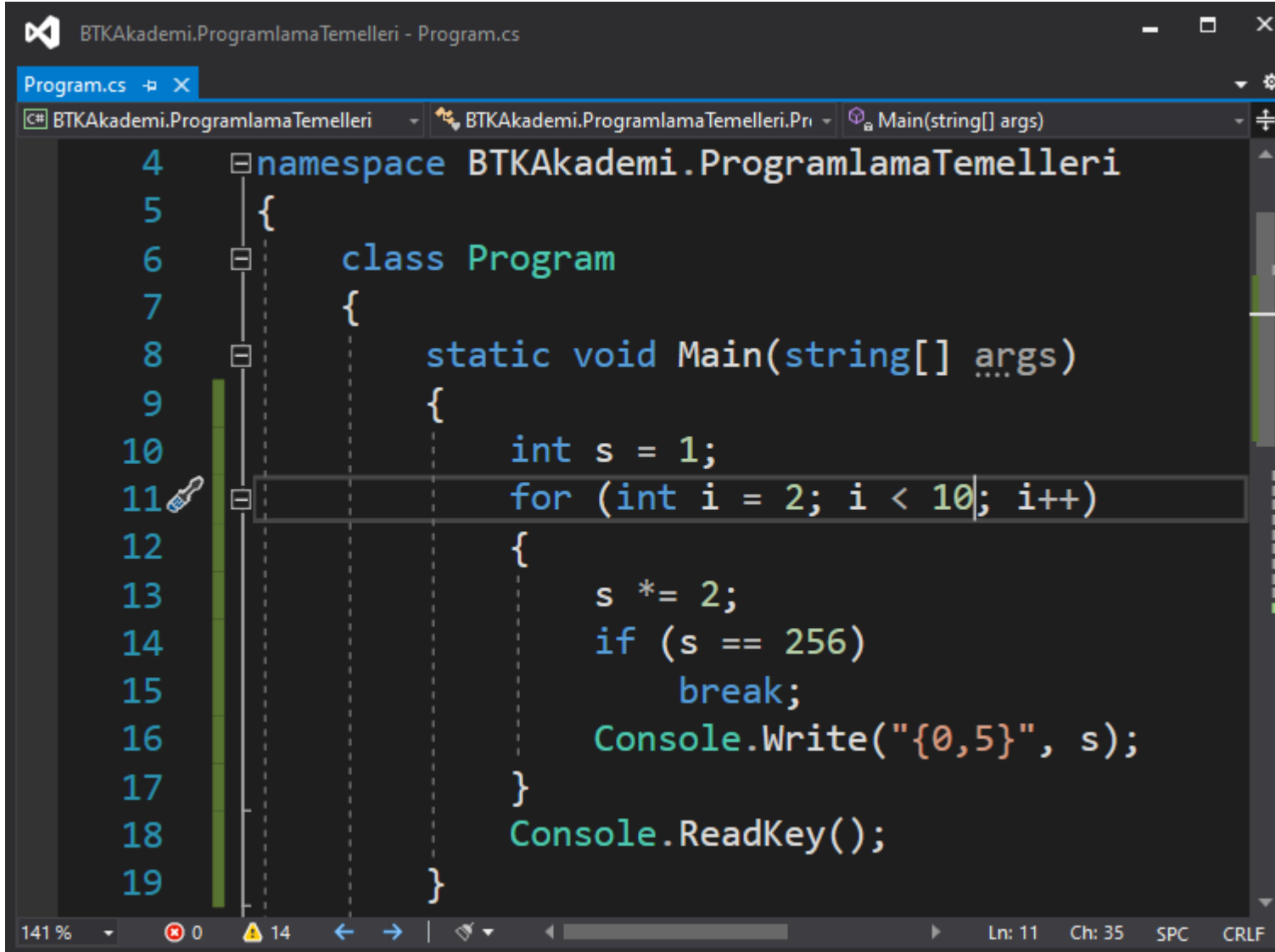
# Döngü kontrol ifadeleri



```
4 namespace BTKAkademi.ProgramlamaTemelleri
5 {
6     class Program
7     {
8         static void Main(string[] args)
9         {
10             for (int i = 0; i < 20; i++)
11             {
12                 if (i % 3 == 0)
13                     continue;
14                 Console.Write("{0,3}", i);
15             }
16             Console.ReadKey();
17         }
18     }
19 }
```

The screenshot shows a Visual Studio Code editor window titled "BTKAkademi.ProgramlamaTemelleri". The editor displays a C# file named "Program.cs" with the following code: A namespace "BTKAkademi.ProgramlamaTemelleri" containing a class "Program". Inside "Program", there is a static method "Main" that takes a string array "args". The "Main" method contains a "for" loop that iterates from 0 to 19. Inside the loop, there is an "if" statement that checks if the current value of "i" is divisible by 3. If it is, the "continue" statement is executed, skipping the rest of the loop body. Otherwise, the "Console.Write" method is called to print the value of "i" followed by a space. After the loop, the "Console.ReadKey" method is called to wait for a key press. The editor interface includes a sidebar on the left with a file explorer, a top toolbar with various icons, and a bottom status bar showing the current line (177), column (13), and other details.

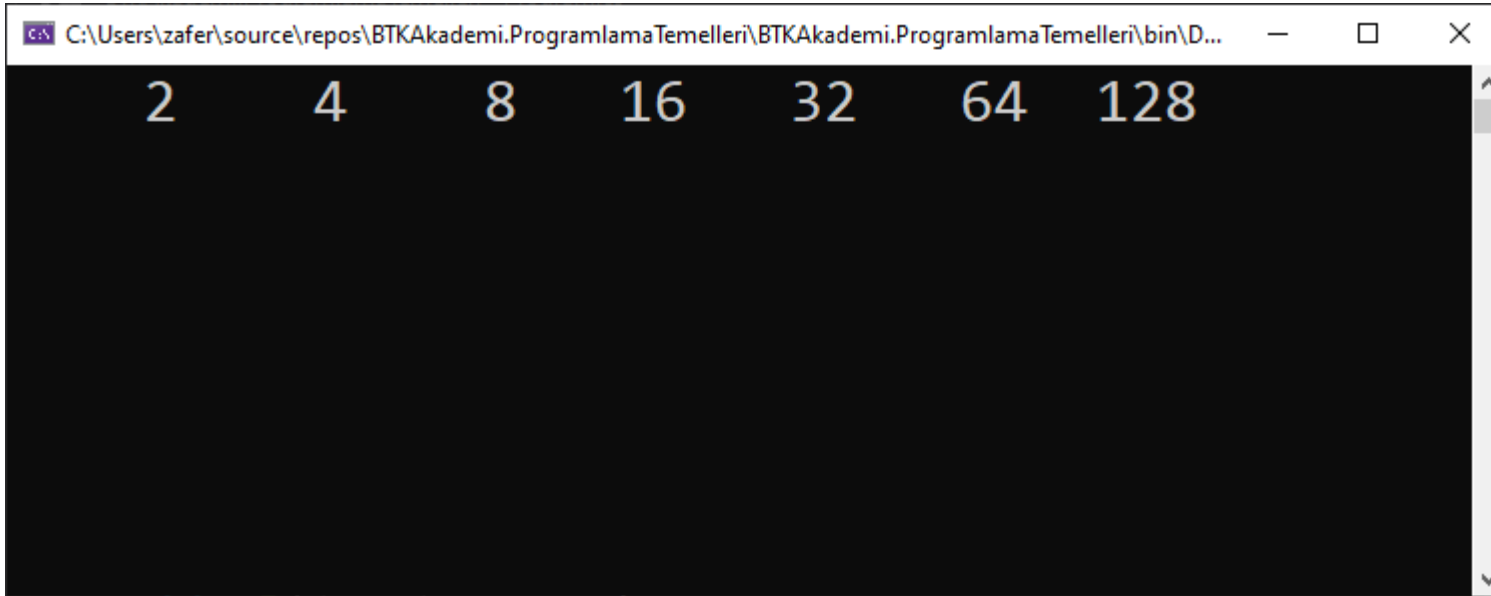
# Döngü kontrol ifadeleri



```
4 namespace BTKAkademi.ProgramlamaTemelleri
5 {
6     class Program
7     {
8         static void Main(string[] args)
9         {
10             int s = 1;
11             for (int i = 2; i < 10; i++)
12             {
13                 s *= 2;
14                 if (s == 256)
15                     break;
16                 Console.Write("{0,5}", s);
17             }
18             Console.ReadKey();
19         }
20     }
21 }
```

The screenshot shows a Visual Studio Code window with a C# file named Program.cs. The code defines a namespace BTKAkademi.ProgramlamaTemelleri, a class Program, and a static method Main. Inside Main, a variable s is initialized to 1, and a for loop iterates from i = 2 to i = 9. Inside the loop, s is multiplied by 2, and if it reaches 256, a break statement is executed. The current value of s is printed using Console.Write. The status bar at the bottom shows 141% zoom, 0 errors, 14 warnings, and the cursor is at line 11, column 35.

# Döngü kontrol ifadeleri



A screenshot of a Windows command prompt window. The title bar shows the path: C:\Users\zafer\source\repos\BTAKademi.ProgramlamaTemelleri\BTAKademi.ProgramlamaTemelleri\bin\D... The command prompt displays a sequence of numbers: 2, 4, 8, 16, 32, 64, 128, which are powers of 2. The numbers are displayed in a light blue font on a black background.

```
2 4 8 16 32 64 128
```



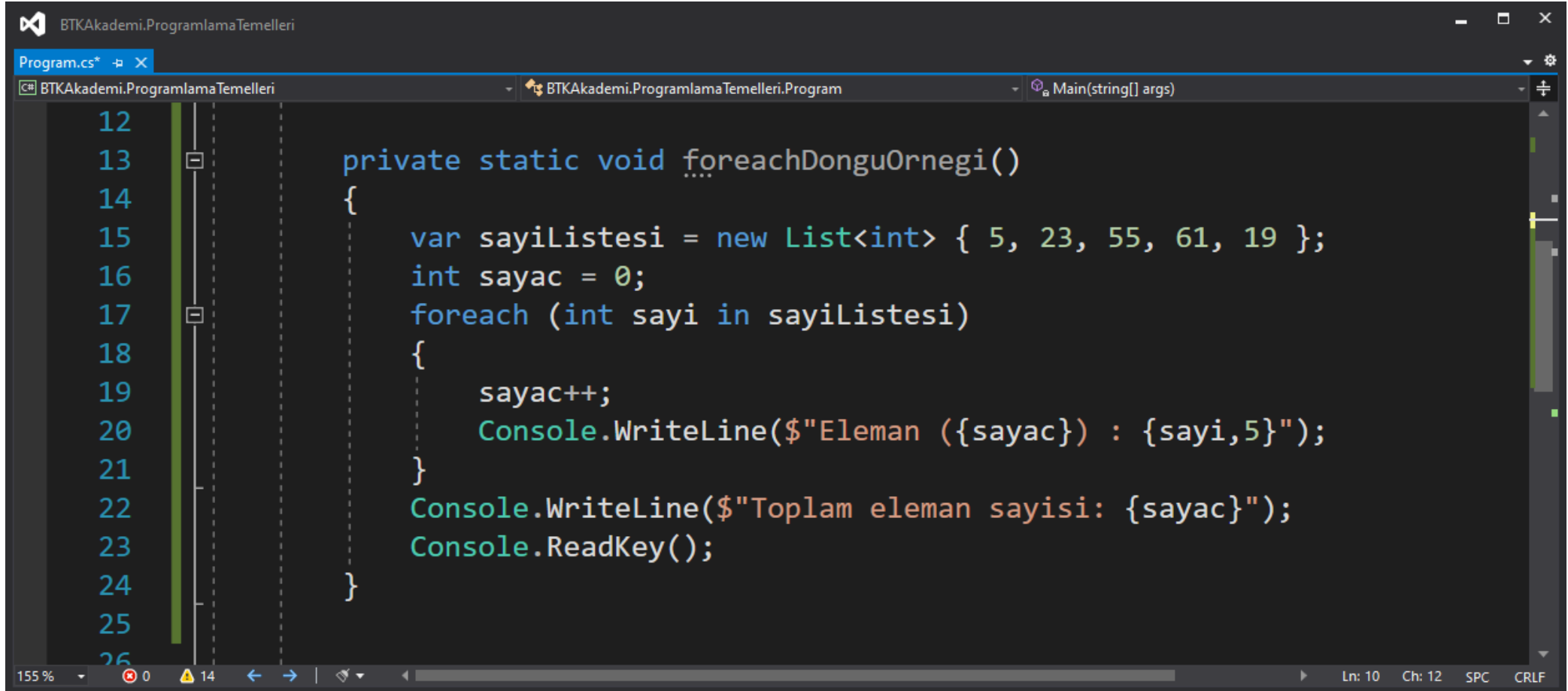
# foreach Döngüsü

C#

 Kopyala

```
foreach (var item in collection) { }
```

# foreach Döngüsü

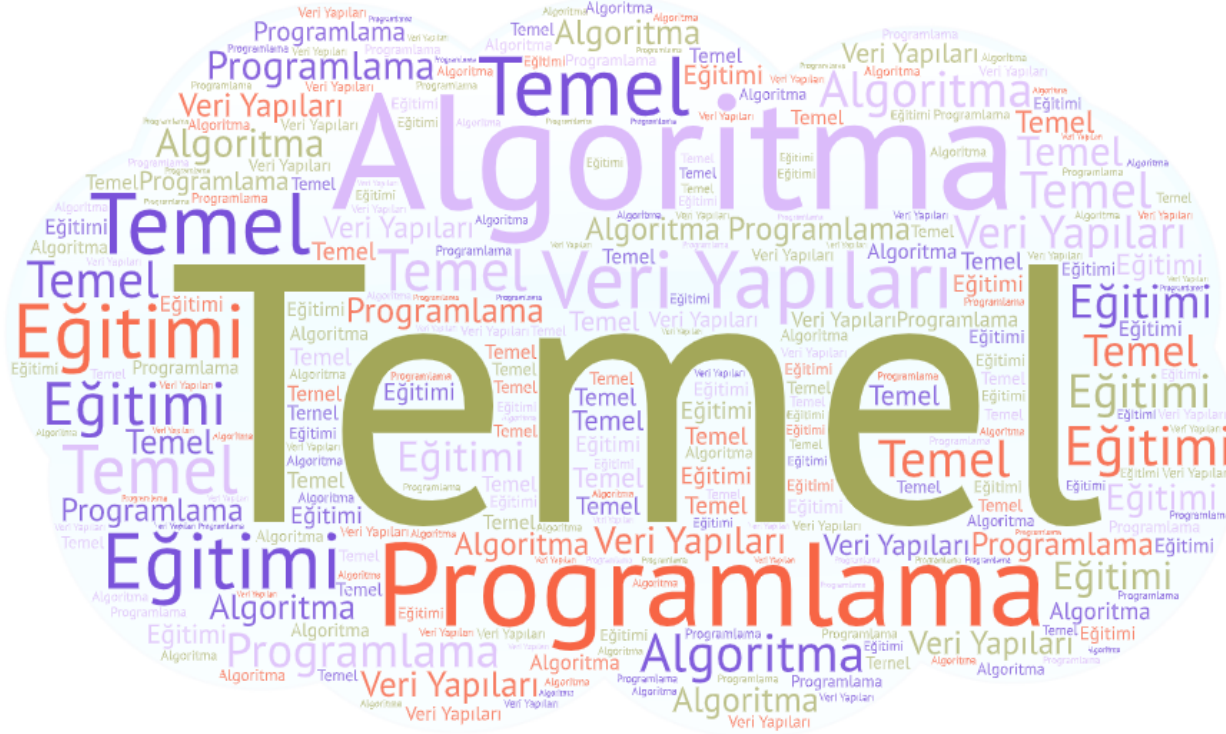


```
12  
13  
14 private static void foreachDonguOrnegi()  
15 {  
16     var sayiListesi = new List<int> { 5, 23, 55, 61, 19 };  
17     int sayac = 0;  
18     foreach (int sayi in sayiListesi)  
19     {  
20         sayac++;  
21         Console.WriteLine($"Eleman ({sayac}) : {sayi,5}");  
22     }  
23     Console.WriteLine($"Toplam eleman sayisi: {sayac}");  
24     Console.ReadKey();  
25 }  
26
```

155 % 0 14 Ln: 10 Ch: 12 SPC CRLF

# foreach Döngüsü

```
C:\Users\zafer\source\repos\BTAKademi.ProgramlamaTemelleri\BTAKademi.ProgramlamaTemelleri\bin\Debug\netcor...  
Eleman (1) : 5  
Eleman (2) : 23  
Eleman (3) : 55  
Eleman (4) : 61  
Eleman (5) : 19  
Toplam eleman sayisi: 5
```



## Çevrimler (Döngüler)